Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION

Organized by
Serbian Ceramic Society
&
Institute of Technical Sciences of SASA

PROGRAM AND THE BOOK OF ABSTRACTS

Serbian Academy of Sciences and Arts, Knez Mihailova 35
May 10-11th, 2012, Belgrade, Serbia

Book title: Serbian Ceramic Society Conference - ADVANCED CERAMICS AND APPLICATION: Program and the Book of Abstracts

Publisher:
Serbian Ceramic Society

Editors:
Prof. Dr. Vojislav Mitić
Dr. Nina Obradović
Dr. Lidija Mančić

Technical Editor:
Aleksandra Stojičić

Printing:
Serbian Academy of Sciences and Arts,
Knez Mihailova 35, Belgrade, Serbia
Format
Pop Lukina 15, Belgrade, Serbia

Edition:
70 copies

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

666.3/.7(048)
66.017/.018(048)

SERBIAN Ceramic Society. Conference (1 ; 2012 ; Beograd)
Advanced Ceramics and Application : program and the book of abstracts / #[1st] #Serbian Ceramic Society Conference, May 10-11th, 2012, Belgrade, Serbia ; organized by Serbian Ceramic Society & Institute of Technical Science of SASA ; [editors Vojislav Mitić, Nina Obradović, Lidija Mančić]. - Belgrade : Serbian Ceramic Society, 2012 (Belgrade : Serbian Academy of Sciences and Arts). - XII, 37 str. ; 29 cm

Tiraž 70.

ISBN 978-86-915627-0-0
1. Srpsko keramičko društvo (Beograd)
a) Керамика - Апстракти b) Наука о материјалима - Апстракти c) Наноматеријали - Апстракти
COBISS.SR-ID 190546188

S3.2 – invited

Mechanochemical Synthesis of Nanocrystalline Multiferroics Based on Bismuth Manganite

Zorica Marinković Stanojević[1], Lidija Mančić[2], Marko Jagodič[3], Zvonko Jagličić[3], Aleksander Rečnik[4], Zorica Branković[1], Goran Branković[1]

[1]Institute for Multidisciplinary Research, University of Belgrade, Kneza Višeslava 1a, 11030 Belgrade, Serbia, [2]Institute of Technical Sciences of SASA, Knez-Mihailova 35/IV, 11000 Belgrade, Serbia, [3]Institute of Mathematics, Physics and Mechanics, Jadranska 19, 1000 Ljubljana, Slovenia, [4]Jožef Stefan Institute, 1000 Ljubljana, Slovenia

Multiferroic materials simultaneously possess two or more ferroic orders, and enable a coupling interaction between them. Multiferroic bismuth manganite is known as a material that exhibits both ferromagnetic and ferroelectric properties making it interesting for various technological applications. Unfortunately, preparation of $BiMnO_3$ is not possible by conventional solid state reaction and $BiMnO_3$ has been synthesized from the mixture of oxides only at high pressures (> 40 kbar). The aim of this work was to synthesize $BiMnO_3$ (BMO) without additional heating or application of high pressures. Nanocrystalline single-phased $BMnO_3$ was prepared for the first time by mechanochemical synthesis directly from the highly activated constituent oxides, Bi_2O_3 and Mn_2O_3, in a planetary ball mill. The obtained materials were characterized by X-ray diffraction, SEM with EDS analysis, HRTEM and magnetization measurements. All the samples were found to be tetragonal perovskite with P4mm crystallographic group. The broad maxima reflections of BMO samples can be ascribed to an amorphous/disordered phase. HRTEM micrographs give clear evidence of core-shell structure with amorphous shell around the nanocrystalline BMO particles. The magnetic hysteresis behavior is similar to that of a soft ferromagnet. The magnetic properties of the obtained BMO powders were found to change as a function of milling time in a manner consistent with the variation in the nanocomposite microstructure.